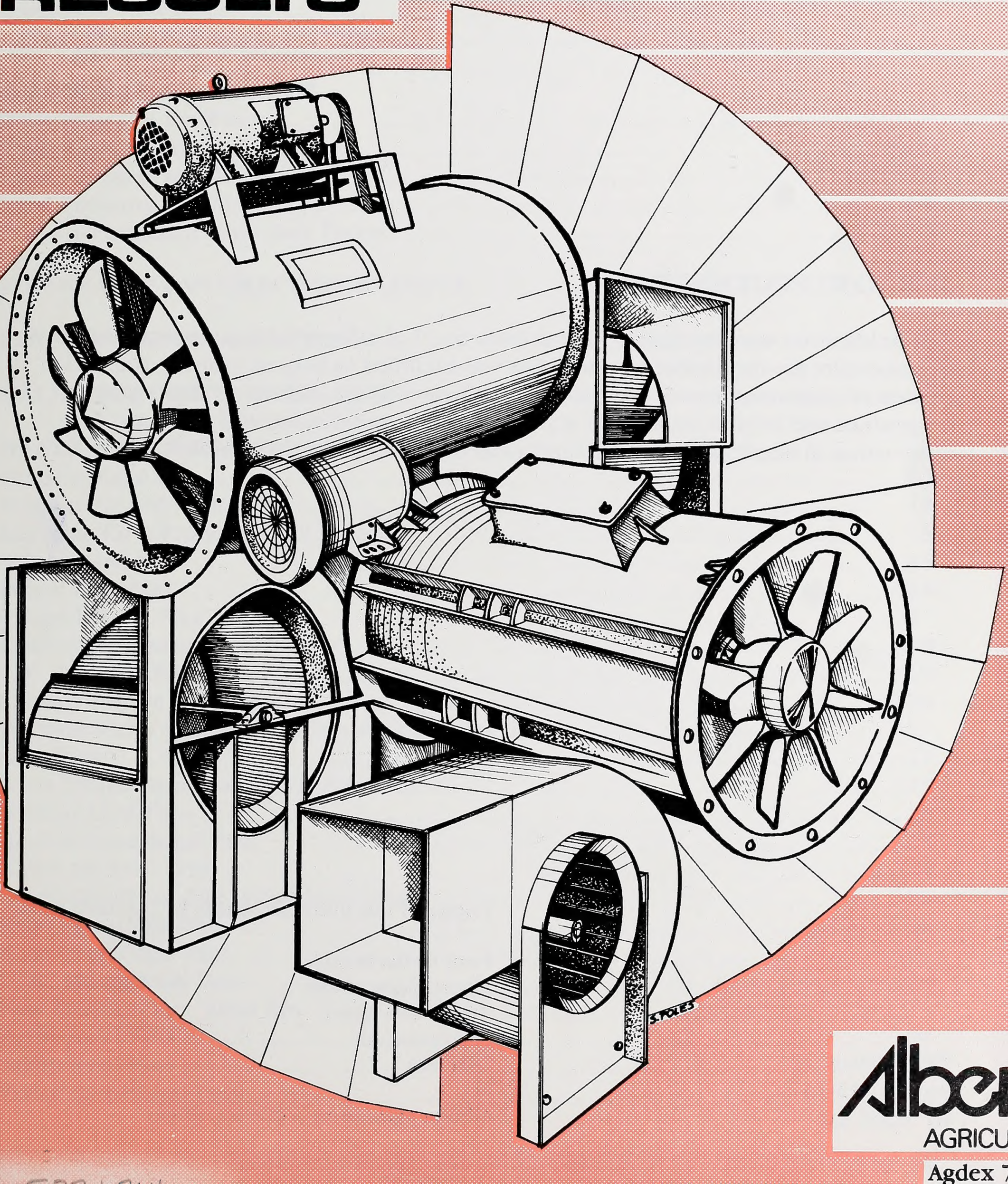
AR121482

FAN SELECTION

INCLUDING THE MANITOBA FAN TEST RESULTS



Alberta
AGRICULTURE

Agdex 732-14

ACKNOWLEDGEMENT

This publication was distributed in draft form to all of Alberta's district agriculturists. A questionnaire for the district agriculturists was included to help us evaluate the tricky process of combining metric fan data with bushels of grain. Thanks to their many suggestions and helpful criticism it is hoped that this publication will present information in metric and imperial units in as useful a manner as possible.

Copies of this publication may be obtained from:

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FAN SELECTION

Before you can select a fan for your grain bin several questions need to be answered. Some of the most important questions are:

1. What type of fan is best suited to my grain bin?

The choices are:

* **Axial Fans**
- tube axial fan
- vane axial fan

* **Centrifugal (radial) Fans**
- straight blade centrifugal fan
- forward curve centrifugal fan
- backward curve centrifugal fan

2. What air flow rate do I need for my system?

Different management systems need different air flow rates to work properly. The types of management systems to consider are:

* **aeration**
* **natural air drying**
* **dryeration**
* **cooling**

3. What pressure range will my fan be operating in?

The operating pressure of the fan must be calculated in order to select a properly sized fan.

The information needed to answer all of these questions is presented in this booklet.

METRIC CONVERSION FACTORS

All fan test data were collected in metric by the Manitoba Department of Agriculture. It would be inaccurate to convert their data into imperial units but we try to make the calculations easier by presenting step by step instructions on selecting fans.

People who would rather do their own conversions can use the following conversion factors.

PRESSURE	* 1 inch of water = 250 Pascals (Pa)
AIRFLOW	* 1 cubic foot per minute (cfm) = 0.47 Litres per second (L/s)
	* 1 cfm per bushel = 13 Litres per second per m^3 (L/s-m^3)
VOLUME	* 100 bushels (bu) = 3.6 cubic metres (m^3)
DEPTH	* 1 foot = 0.3 metres (m)

FAN TYPES

Fan performance is usually measured as a flow rate against a given pressure. The usual units of measurement are litres per second (L/s) for flow and Pascals (Pa) for pressure.

There are two main classes of fans used for grain drying, aeration and cooling; the axial fan, and the centrifugal fan. These fans have much higher static pressures than the propeller fans used for barn ventilation.

Axial Fans

Axial fans consist of aerodynamically shaped blades set on a shaft inside a tube casing. Axials are designed with the motor in the air stream. This has two advantages; the motor is cooled by the air flow and, the heat of the motor helps to dry the grain. The disadvantage is that when the motor is fully loaded (high pressure/low air flow) it is getting the least amount of cooling.

Axial fans are suitable for grain aeration and drying installations. At operating pressures up to 1000 Pa axial fans tend to be the most efficient. Their small size and portability also make them popular, however, they are noisy. Figure 1 shows a simple tube axial fan.

Some axial fans have guide vanes which straighten the air flow, these fans are called vane axial fans (Figure 2). They are more efficient and usually more expensive than the tube axial fan.

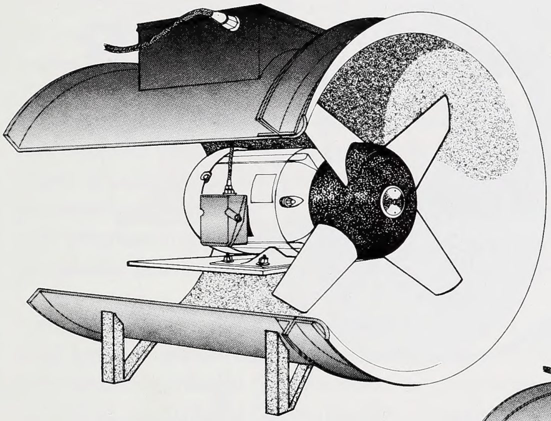


Figure 1. This is a simple axial fan usually called a tube axial.

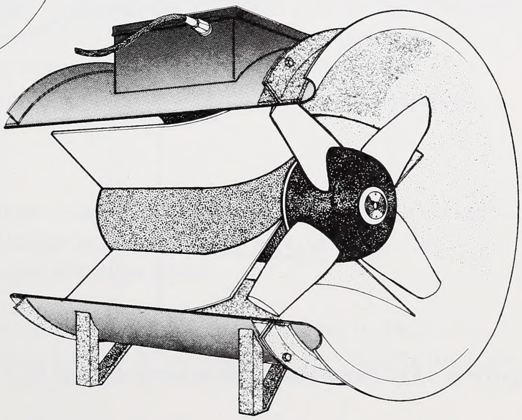


Figure 2. Axial fans with vanes to straighten the air flow.

Centrifugal Fans

Centrifugal fans have paddle wheel type blades mounted on a rotor inside the fan housing. Air enters through the hub, makes a right angle turn in the fan wheel, and is thrown outwards from the wheel by centrifugal force as shown in Figure 3.

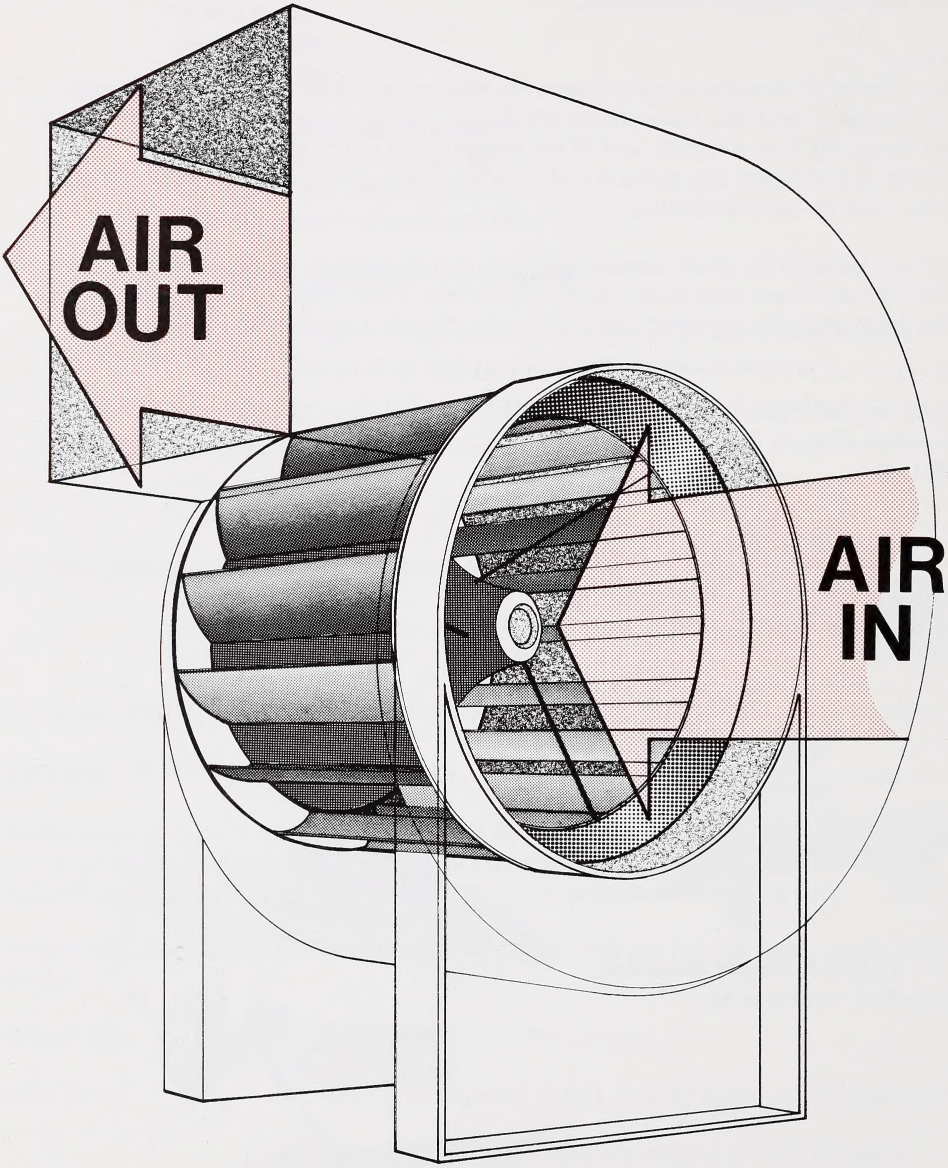


Figure 3. Air flow through a centrifugal fan.

Centrifugal fans are classified by the shape of their blades. There are three types of centrifugal fans; straight blade, forward curved, and backward curved. Figure 4 shows a schematic diagram which illustrates these three types of centrifugal fans.

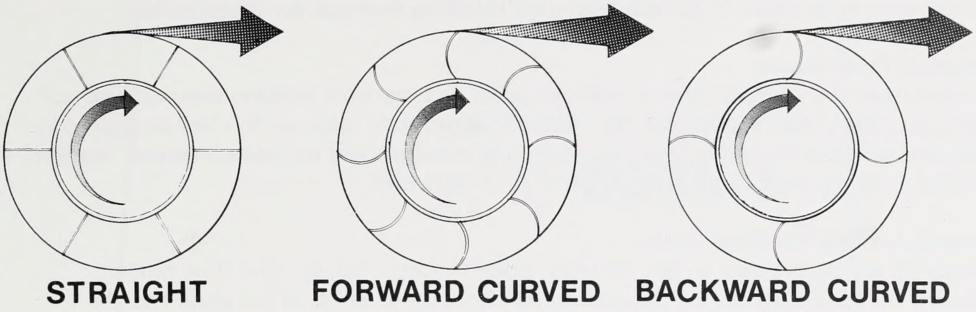


Figure 4. The three types of centrifugal fans.

Straight blade fans: These fans are frequently referred to as paddle blade fans. They are used for pneumatic conveying or the movement of dust-laden air because of their self-cleaning characteristics. Generally, there are five or six widely spaced blades.

Forward curved fans: Each blade is curved with the concave side facing the direction of rotation. The blades are relatively shallow, wide, and closely spaced. This type of fan runs at low RPM.

Both straight or forward curved fans can overload their motors if the static pressure they are working against drops (for instance, when the bin is almost empty). As they begin to deliver more air, more power is required. This process can continue until the motor burns out.

Backward curved fans: Backward curved fans have more blades than a straight bladed fan, but less than a forward curved fan. They operate at higher speeds than the other types of centrifugal fans, have the highest efficiencies (up to 80%), and the best pressure performance. The most important advantage of the backward curved fan is its non-overloading characteristic. It is designed to handle low air flows at high static pressures, however, they can handle high airflows if they are large enough.

Centrifugal fans are used for grain drying and aeration where large volumes of air under high pressures are required. At pressures of 1000 to 1500 Pa the low speed (1750 rev/min) centrifugal fans do best. At pressures over 1500 Pa, a high speed (3450 rev/min) centrifugal fan is usually recommended. A centrifugal fan is much quieter than an axial fan of the same capacity.

CSA Certification

The Alberta Electrical Protection Act requires that all fans sold in Alberta have Canadian Standards Association (CSA) or Electrical Protection Branch (EPB) approval. CSA approved fans have a CSA stamp on their specification plate.

Alberta fans may have local Electrical Protection Branch (EPB) approval in place of a CSA stamp. EPB approved fans have a yellow sticker mounted close to the specification plate.

Make sure that your overall fan unit has been certified. Certification on the fan motor does not mean that the overall fan unit has been approved.

AIR FLOW RATE

Selection of the air flow rate is a management decision based on the type of grain conditioning to be done. The four main conditioning methods are listed below.

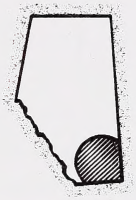
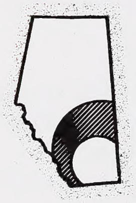
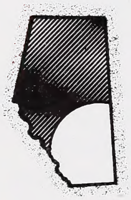
Aeration Flow Rates

Aeration uses low air flow rates to cool the grain and ensure a uniform temperature and moisture content throughout the bin. Since aeration flow rates are too low to guarantee grain drying, grain should be put into the bin at close to final moisture content. Air flow rates for aeration are 1 to 2 L/s-m^3(0.08 to 0.15 cfm/bu).

Natural Air Drying Flow Rates

Natural air drying is a race to get the grain dried before it spoils. The flow rates required for natural air drying depend on the moisture content of the grain and the weather. Table 1 and Figure 5 can be used as a rough guideline.

TABLE 1 NATURAL AIR DRYING FLOW RATES FOR ALBERTA

CLIMATIC ZONE	% Moisture Content above "dry"	Recommended Air Flow Rate	
		L/s-m^3	cfm/bu
1 	up to 4%	5 - 10	0.5 - 0.75
	4% to 6%	10 - 15	0.75 - 1.0
2 	up to 4%	10 - 15	0.75 - 1.0
	4% to 6%	15 - 20	1.0 - 1.5
3 	up to 4%	15 - 20	1.0 - 1.5
	4% to 6%	20 - 25	1.5 - 1.75

Dryeration Flow Rates

With dryeration a grain dryer is used to bring the grain moisture down to within 2%-3% of "dry". The grain is transferred to the dryeration bin for tempering and cooling. This process brings the grain temperature and moisture content down to the point where it can be transferred and safely stored in an aerated storage bin. Typical dryeration rates are 5 to 10 L/s-m^3 (0.4 to 0.75 cfm/bu).

In Storage Cooling Flow Rates

In storage cooling is similar to dryeration except the hot grain is transferred directly to an aerated storage bin at 1% above dry and cooled immediately. Air flow rates for cooling are 5 to 10 L/s-m^3 (0.4 to 0.75 cfm/bu).

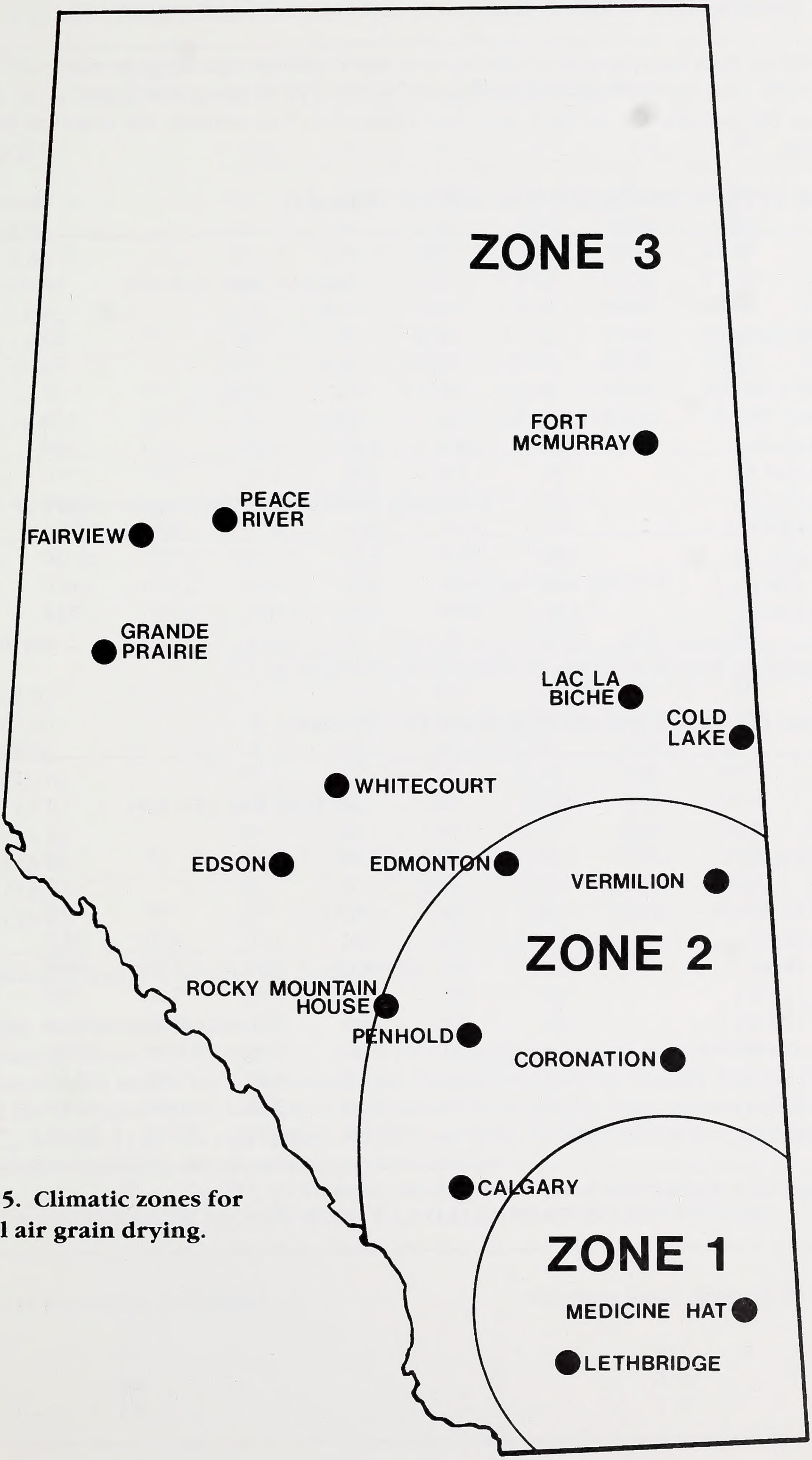


Figure 5. Climatic zones for natural air grain drying.

FAN OPERATING PRESSURES

After the air flow rate (in L/s-m^3) has been selected, the fan operating pressure can be calculated. The operating pressure depends on the type of grain, and depth of the grain piled in the bin, and the air flow rate. Use Tables 2 to 5 to estimate the required fan pressure.

TABLE 2 STATIC PRESSURES FOR WHEAT* (Pascals)

	Air Flow Rate (L/s-m^3)						
Grain Depth	1	2	5	10	15	20	25
1.2 m (4 ft)	5	10	25	60	90	130	170
1.8 m (6 ft)	10	20	60	140	220	310	400
2.4 m (8 ft)	20	40	110	260	410	580	750
3.0 m (10 ft)	30	60	180	420	670	940	1220
3.6 m (12 ft)	40	90	270	620	1000	1390	1810
4.2 m (14 ft)	60	130	380	870	1400	1950	2530
4.8 m (16 ft)	80	180	510	1160	1860	2600	3380
5.4 m (18 ft)	100	230	660	1490	2400	3360	4360
6.0 m (20 ft)	130	290	830	1880	3020	4224	5490

* if a spreader is used with wheat multiply the pressure by 1.3

TABLE 3 STATIC PRESSURES FOR BARLEY* (Pascals)

	Air Flow Rate (L/s-m^3)						
Grain Depth	1	2	5	10	15	20	25
1.2 m (4 ft)	5	10	20	50	80	110	140
1.8 m (6 ft)	10	20	50	120	180	250	320
2.4 m (8 ft)	20	40	100	220	330	460	620
3.0 m (10 ft)	30	60	160	340	530	780	1050
3.6 m (12 ft)	40	90	240	500	810	1190	1600
4.2 m (14 ft)	50	120	330	690	1160	1700	2300
4.8 m (16 ft)	70	160	430	920	1580	2330	3140
5.4 m (18 ft)	90	200	550	1210	2090	3070	4140
6.0 m (20 ft)	120	250	680	1550	2670	3920	5290

* if a spreader is used with barley multiply the pressure by 1.5

TABLE 4 STATIC PRESSURES FOR CANOLA (Pascals)

	Air Flow Rate (L/s-m³)						
Grain Depth	1	2	5	10	15	20	25
1.2 m (4 ft)	10	20	60	130	200	270	340
1.8 m (6 ft)	30	50	140	300	460	620	780
2.4 m (8 ft)	50	100	260	540	830	1120	1410
3.0 m (10 ft)	80	160	410	850	1300	1770	2230
3.6 m (12 ft)	110	230	600	1240	1900	2570	3250
4.2 m (14 ft)	150	310	820	1700	2600	3520	4450
4.8 m (16 ft)	200	410	1080	2240	3420	4630	5850
5.4 m (18 ft)	250	530	1370	2850	4360	5900	7450
6.0 m (20 ft)	310	650	1710	3530	5410	7320	9250

TABLE 5 STATIC PRESSURES FOR CORN* (Pascals)

	Air Flow Rate (L/s-m³)						
Grain Depth	1	2	5	10	15	20	25
1.2 m (4 ft)	1	2	10	20	30	50	70
1.8 m (6 ft)	2	6	20	50	90	130	170
2.4 m (8 ft)	4	10	40	100	170	250	340
3.0 m (10 ft)	10	20	70	170	290	420	570
3.6 m (12 ft)	10	30	100	260	440	630	880
4.2 m (14 ft)	20	40	140	370	630	930	1260
4.8 m (16 ft)	20	60	200	500	870	1280	1720
5.4 m (18 ft)	30	70	260	660	1140	1680	2270
6.0 m (20-ft)	40	100	330	850	1460	2150	2910

* if a spreader is used multiply the pressures by 1.5

Partially Perforated Floors

The pressures listed in Tables 2, 3, 4, and 5 are for fully perforated grain bin floors. In bins which don't have a fully perforated floor the pressure will be slightly higher. Table 6 has a list of factors which take this into account. Multiply the static pressure (found in Table 2, 3, 4, or 5) by the appropriate factor from Table 6. This will give actual static pressure for a bin with only a partially perforated floor.

TABLE 6 FACTORS FOR FLOORS WITH PARTIALLY PERFORATED FLOORS

% of Floor Area Perforated	Multiply Static Pressure by:
50	1.1
25	1.3
15	1.5

STEP BY STEP FAN SELECTION EXAMPLE

I have 1500 bushels of canola piled 10 feet high in my bin near Lloydminster. I want to use natural air to dry from 12% moisture content down to 8.5%. Which fans would work best?

Information needed to calculate fan sizes:

Management System:
☐ aeration
☐ dryeration
☑ natural air drying
☐ in storage cooling

Grain type:
☑ canola
☐ barley
☐ wheat
☐ corn

Location: LLOYDMINSTER

Height of Grain: 10' feet

Volume of Grain: 1500 bushels

% of Floor Area Perforated: 25% %

Initial Moisture Content of Grain: 12% %

Final Moisture Content of Grain: 8.5% %

Fans Brands Preferred:* CALDWELL, KEHO

* this is simply an example and does **not** imply endorsement of any particular fan brand.

STEP 1 - Convert bushels to cubic meters.

Multiply the number of bushels by 0.036 m^3/bu

1500 bu x 0.036 m^3/bu = 54 m^3

STEP 2 - Determine % above dry.

Initial moisture content - final moisture content = % above dry

12 % - 8.5 % = 3.5 % above dry.

Use Table 1 and Figure 5 to select an approximate flow rate (in L/s-m^3).

Lloydminster is in Zone 2 (Figure 5). Use a flow rate of 10 L/s-m^3 for 3.5% above dry (from Table 1).

Airflow rate = 10 L/s-m^3 (From table 1, page 5)

STEP 3 - Calculate bin air flow.

Multiply the grain volume (m^3) from step one with the flow rate/m^3 from step two to calculate total fan air flow in litres per second.

54 m^3 x 10 L/s-m^3 = 540 L/s

If you wish to convert to CFM; multiply L/s by 2

540 L/s x 2 CFM/L/s= 1080 CFM (approximately)

STEP 4 - Calculate fan operating pressure.

Tables 2 to 5 determine the fan operating pressure.

Use Table 4 for canola. With canola piled 10 feet high and a flow rate/m^3 (from step two) of 10 L/s-m^3 the fan operating pressure should be 850 pascals (Pa).

Fan Operating Pressure= 850 Pa (From page 7 and page 8)

STEP 5 - Adjust pressure for partially perforated bin floors.

Table 6 has the factors to adjust the fan operating pressure (found in Tables 2 to 5) for bins which don't have 100% of their floor area perforated. For a floor with 25% of its area perforated use a factor of 1.3. Multiply the pressure found in Step 4 (850 Pa) by the factor from Table 6.

Perforated Floor Factor= 1.3 (From table 6, page 8)

Adjusted Pressure = 850 Pa x 1.3 = 1105 Pa

STEP 6 - Select fan models from the Manitoba Fan Test Results

Look up the brands you are considering in the Manitoba fan test results (pages 13 to 30). Write down the brand, model number, and air flow of these fans at an operating pressure 1105 Pa (since 1105 Pa is not listed in the tables, use the closest pressure - 1125 Pa) and have an air flow of approximately 540 L/s at that pressure.

Look for:

Fan Operating Pressure 1125 Pa from step six.

Required Air Flow 540 L/s from step three.

KEHO - CENTRIFUGAL, FORWARD CURVED - 3HP - 530 L/S (page 26)

CALDWELL - AXIAL, 18" DIA - 3HP - 530 L/S (page 17)

Which one to choose?

The cost, availability, and power consumption of a fan, and the reputation of the fan dealer are very important considerations when selecting a fan. Keep in mind that the depth of grain or the initial moisture content can be varied to make the aeration system fit a preferred brand of fan.

FAN SELECTION WORKSHEET

Information needed to calculate fan sizes:

Management System:

☐ aeration ☐ dryeration

☐ natural air drying ☐ in storage cooling

Grain type: ☐ canola ☐ barley

☐ wheat ☐ corn

Location: ______________________________

Height of Grain: ______________________________ feet

Volume of Grain: ______________________________ bushels

% of Floor Area Perforated: ______________________________ %

Initial Moisture Content of Grain: ______________________________ %

Final Moisture Content of Grain: ______________________________ %

Fans Brands Preferred: ______________________________

STEP 1 - Convert bushels to cubic meters.

Multiply the number of bushels by 0.036 m^3/bu

__________ bu x 0.036 m^3/bu = __________ m^3

STEP 2 - Determine % above dry.

Initial moisture content - final moisture content = % above dry

__________ % - __________ % = __________ % above dry.

Use Table 1 and Figure 5 to select an approximate flow rate (in L/s-m^3).

Airflow rate= __________ L/s-m^3 (From table 1, page 5)

STEP 3 - Calculate bin air flow.

Multiply the grain volume (m^3) from step one with the flow rate/m^3 from step two to calculate total fan air flow in litres per second.

__________ m^3 x __________ L/s-m^3 = __________ L/s

If you wish to convert to CFM; multiply L/s by 2

__________ L/s x 2 CFM/L/s= __________ CFM (approximately)

STEP 4 - Calculate fan operating pressure.

Tables 2 to 5 determine the fan operating pressure.

Fan Operating Pressure= __________ Pa (From page 7 and page 8)

STEP 5 - Adjust pressure for partially perforated bin floors.

Table 6 has the factors to adjust the fan operating pressure (found in Tables 2 to 5) for bins which don't have 100% of their floor area perforated.

Perforated Floor Factor= __________ (From table 6, page 8)

Adjusted Pressure = __________ Pa x __________ = __________ Pa

STEP 6 - Select fan models from the Manitoba Fan Test Results

Look up the brands you are considering in the Manitoba fan test results (pages 13 to 30). Write down the brand, model number, and air flow of these fans at an operating pressure.

Look for:

Fan Operating Pressure __________ Pa from step six.

Required Air Flow __________ L/s from step three.

____

____

____

____

____

____

____

MACHINERY INSTITUTE FAN TESTS

The Prairie Agricultural Machinery Institute has been testing agricultural fans since 1983. They prepare detailed four page reports on the price and performance of each fan tested at the machinery institute. The reports are available free of charge* by writing to:

Prairie Agricultural Machinery Institute
c/o LCC Campus
Lethbridge, AB
T1K 1L6

NOTE: Farmers are allowed up to twenty reports free of charge.

MANITOBA FAN TEST RESULTS

The Fan Test Results in this publication were printed from the Manitoba Department of Agriclture's **FAN TEST RESULTS** revised November, 1983 (the blue booklet).

The following fan performance data were obtained in tests conducted by the Engineering Section of the Manitoba Department of Agriculture in cooperation with the Agricultural Engineering Department of the University of Manitoba. The tests were conducted in accordance with the procedures outlined by the Air Moving and Conditioning Association, Standard 210-74.

The fans were obtained from dealers, farmers, and manufacturers and were tested without alteration. In most cases, only one fan of each make and model was tested. Other fans of the same make and model may have slightly different outputs.

AEROVENT AXIAL FANS

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	1/3 HP 12" dia	1 HP 14" dia	1.5 HP 18" dia	3 HP 18" dia	7.2 HP 24" dia
125 Pa	680	1360	2280	3070	5240
250	500	900	1890	2670	4820
375	310	620	1450	2010	4370
500	170	380	1000	1300	3910
625	30	160	590	640	3360
750	0	0	300	190	2820
875			80	0	2300
1000			0		1780
1125					1300
1250					840
1375					400
1500					70
1625					0

AIRMASTER (GOLD-N-AIR) FANS

3450 rev/min

Outputs in litres per second (L/s)

	Axial Fans		Tubular Centrifugal	Centrifugal Fans		
Static Pressure	4 HP 18'' dia	7 HP 24'' dia	7 HP	5 HP	7.5 HP	10 HP
125 Pa	2610	4740	2140	1690	1940	2750
250	2450	4470	2100	1630	1910	2710
375	2260	4190	2050	1580	1870	2670
500	2040	3900	1990	1540	1840	2630
625	1770	3590	1920	1510	1810	2590
750	1480	3230	1850	1470	1780	2550
875	1190	2880	1780	1440	1750	2510
1000	950	2450	1720	1410	1720	2450
1125	780	2020	1650	1370	1700	2400
1250	610	1670	1580	1330	1660	2350
1375	430	1360	1510	1290	1630	2320
1500	240	1060	1430	1250	1590	2290
1625	40	770	1340	1210	1550	2260
1750	0	490	1240	1150	1510	2210
1875		230	1130	1080	1470	2160
2000		0	740	1020	1430	2110
2250			0	900	1350	2040
2500				630	1270	1930
2750				0	1180	1830
3000					1100	1740
3250					1020	1560
3500					770	1390
3750					0	830

AMERICAN FARM PRODUCTS AXIAL FANS

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	1.5 HP 12" dia	1.5 HP 18" dia
125 Pa	930	2120
250	640	1910
375	290	1690
500	140	1360
625	30	1020
750	0	720
875		510
1000		310
1125		110
1250		0

BEHLEN AXIAL FANS

1982 Series

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	3/4 HP 12" dia	1 HP 14" dia	2 HP 18" dia	4 HP 18" dia	7 HP 24" dia
125 Pa	920	1160	2030	2680	4740
250	400	820	1780	2460	4470
375	220	590	1480	2210	4190
500	100	440	1170	1940	3900
625	0	320	870	1620	3590
750		140	610	1320	3230
875		30	390	1060	2880
1000		0	200	890	2450
1125			20	750	2020
1250			0	580	1670
1375				390	1360
1500				170	1060
1625				0	770
1750					490
1875					230
2000					0

BUTLER AXIAL FANS

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	3/4 HP 12" dia	1.5 HP 18" dia	3 HP 18" dia	5.3 HP 24" dia
125 Pa	790	2070	2760	4130
250	390	1790	2560	3860
375	260	1490	2250	3600
500	150	1210	1890	3350
625	20	930	1440	3050
750	0	660	1040	2740
875		430	860	2340
1000		220	700	1960
1125		0	570	1670
1250			420	1380
1375			260	1080
1500			90	790
1625			0	560
1750				370
1875				140
2000				0

CALDWELL AXIAL FANS

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	3/4 HP 12" dia	1.5 HP 18" dia	3-4 HP 18" dia	3-4 HP 18" dia	5-7 HP 24" dia	7.5-9.2 HP 24" dia	10.5 HP 24" dia
125 Pa	920	2240	2710	2730	5810	5000	6210
250	400	1900	2480	2510	5400	4710	5870
375	240	1590	2080	2290	4960	4390	5470
500	110	1260	1650	1950	4590	4050	5060
625	0	950	1250	1360	4090	3680	4500
750		640	960	1060	3510	3290	3780
875		400	710	850	2840	2860	3050
1000		200	520	710	2270	2460	2420
1125		0	360	560	1820	2090	1880
1250			190	420	1410	1720	1460
1375			20	290	1030	1480	1030
1500			0	160	710	1260	620
1625				30	380	1050	220
1750				0	50	840	0
1875					0	630	
2000						400	
2125						170	
2250						0	

CALDWELL CENTRIFUGAL FANS

Outputs in litres per second (L/s)

	1750 rev/min		3450 rev/min				
Static Pressure	**5 HP**	**7.5 HP**	**3 HP**	**5 HP**	**7.5 HP**	**10 HP**	**15 HP**
125 Pa	3690	4550	1200	1710	2100	2790	4140
250	3580	4430	1170	1680	2060	2740	4130
375	3440	4300	1150	1650	2020	2690	4050
500	3290	4160	1130	1620	1980	2640	3970
625	3130	4010	1110	1590	1950	2600	3900
750	2980	3850	1080	1560	1920	2550	3860
875	2810	3670	1050	1520	1880	2510	3830
1000	2600	3490	1020	1490	1850	2460	3790
1125	2400	3320	990	1450	1810	2420	3740
1250	2230	3110	960	1410	1780	2380	3690
1375	1650	2910	930	1370	1750	2340	3630
1500	840	2610	900	1330	1720	2300	3580
1625	60	1720	870	1290	1690	2260	3530
1750	0	0	830	1240	1660	2230	3480
1875			800	1170	1630	2190	3420
2000			760	1110	1600	2140	3350
2250			610	770	1530	2060	3210
2500			0	0	1440	1980	3070
2750					1360	1880	2900
3000					1260	1740	2720
3250					1070	1570	2460
3500					550	620	1660
3750					40	0	0

CML NORTHERN BLOWER CENTRIFUGAL FANS

SQAD Series 3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	**3 HP**	**5 HP**	**7.5 HP**
125 Pa	1710	2290	3020
250	1670	2220	2960
375	1620	2160	2890
500	1560	2100	2830
625	1490	2040	2760
750	1400	1980	2690
875	1330	1930	2610
1000	1270	1860	2530
1125	1210	1790	2460
1250	1140	1720	2360
1375	1080	1640	2270
1500	1020	1560	2180
1625	940	1490	2100
1750	860	1410	2020
1875	690	1310	1960
2000	490	1180	1910
2250	0	770	1790
2500		0	1660
2750			1480
3000			620
3250			0

CHICAGO EASTERN (FSC) FANS

3450 rev/min

Outputs in litres per second (L/s)

	Axial Fans				Centrifugal Fans	
Static Pressure	1 HP 14" dia	1.5-2 HP 18⅜" dia	3-4 HP 18⅜" dia	5-7 HP 22½" dia	3 HP 3450 rev/min	7.5 HP
125 Pa	1130	2450	3530	4670	1490	2830
250	930	2270	3290	4420	1460	2770
375	690	2000	3040	4170	1410	2720
500	520	1680	2770	3870	1350	2660
625	370	1310	2400	3560	1300	2600
750	230	970	1700	3260	1250	2540
875	100	710	1250	2860	1200	2480
1000	0	490	1000	2440	1150	2420
1125		290	810	1970	1090	2360
1250		150	620	1630	1030	2290
1375		10	300	1370	960	2230
1500		0	0	1110	910	2170
1625				860	840	2100
1750				620	760	2020
1875				370	670	1940
2000				130	590	1850
2250				0	190	1700
2500						1530
2750						1360
3000						1210
3250						840
3500						0

EMERSON SOUTH
TUBULAR CENTRIFUGAL FANS

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	4.5 HP 18" outlet cone	4.5 HP 24" outlet
125 Pa	2410	2350
250	2340	2300
375	2260	2230
500	2190	2160
625	2110	2080
750	2030	2010
875	1930	1940
1000	1840	1860
1125	1730	1770
1250	1620	1690
1375	1510	1600
1500	1400	1510
1625	1230	1420
1750	910	1070
1875	580	710
2000	230	380
2125	0	50
2250		0

FARM FANS

3450 rev/min

Outputs in litres per second (L/s)

	Tube Axials				Vane Axials		Centrifugal fan
Static Pressure	1/2 HP 12" dia	1 HP 14" dia	1.5 HP 16" dia	3 HP 18" dia	3 HP 16" dia	5 HP 24" dia	5HP 3450 rev/min
125 Pa	740	1110	1840	2810	2760	5060	1680
250	430	820	1620	2490	2620	4790	1650
375	350	570	1380	2220	2470	4400	1610
500	270	430	1120	1900	2260	3980	1560
625	180	290	850	1510	2010	3490	1500
750	80	160	660	1180	1490	2860	1460
875	0	50	370	880	1100	2200	1430
1000		0	80	550	980	1880	1400
1125			0	150	870	1510	1370
1250				0	770	1060	1330
1375					670	590	1300
1500					520	120	1260
1625					360	0	1230
1750					200		1200
1875					30		1160
2000					0		1120
2250							1010
2500							690
2750							0

GRAIN TROLLER SUPER FANS
AXIAL FANS

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	1 HP 12'' dia	3 HP 18'' dia
125 Pa	910	2590
250	790	2420
375	660	2230
500	420	2020
625	250	1810
750	130	1580
875	10	1330
1000	0	1020
1125		680
1250		500
1375		340
1500		220
1625		100
1750		0

HELIFOIL AXIAL FANS

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	3/4 HP 12'' dia	1.5 HP 12'' dia	3 HP 18'' dia	3 HP 18'' dia	5 HP 18'' dia	5 HP 24'' dia	7.5 HP 24'' dia
125 Pa	860	780	2750	2570	3110	4820	5240
250	450	370	2560	2280	2870	4530	5030
375	280	210	2310	1850	2420	4130	4560
500	140	90	1870	1370	1860	3680	4110
625	10	0	1350	1040	1190	3230	3660
750	0		1070	810	930	2790	3200
875			880	630	770	2340	2730
1000			700	440	610	1860	2290
1125			520	280	450	1450	1890
1250			350	140	270	1070	1510
1375			170	0	90	750	1140
1500			0		0	460	800
1625						170	480
1750						0	160
1875							0

HELIFOIL CENTRIFUGAL FANS

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	3 HP	5 HP	7.5 HP
250 Pa	1520	1850	2400
375	1460	1820	2350
500	1420	1780	2290
625	1370	1760	2240
750	1310	1740	2170
875	1250	1700	2110
1000	1190	1650	2050
1125	1120	1630	1990
1250	1040	1600	1920
1375	940	1560	1850
1500	820	1510	1740
1625	350	1450	1640
1750	0	1380	1530
1875		1310	1430
2000		1240	1310
2250		1090	1080
2500		0	850
2750			0

HUTCH-AIR AXIAL FANS

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	3/4 HP 12" dia	1 HP 14" dia	1.5 HP 18" dia	3 HP 18" dia
125 Pa	830	1390	2150	2650
250	450	1100	1830	2380
375	300	740	1450	2130
500	190	580	1070	1610
625	80	450	750	1170
750	0	320	510	870
875		180	280	630
1000		40	40	430
1125		0	0	230
1250				30
1375				0

IMPEL-AIRE (FEED RITE MILLS) AXIAL FANS

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	1 HP 14" dia	4 HP 18" dia	7 HP 24" dia
125 Pa	1160	2680	4740
250	820	2460	4470
375	590	2210	4190
500	440	1940	3900
625	320	1620	3590
750	140	1320	3230
875	30	1060	2880
1000	0	890	2450
1125		750	2020
1250		580	1670
1375		390	1360
1500		170	1060
1625		0	770
1750			490
1875			230
2000			0

KEHO CENTRIFUGAL FANS

3450 rev/min

Outputs in litres per second (L/s)

	(Forward Curved Blades)			(Backward Curved Blades)	
Static Pressure	**1 HP**	**2 HP**	**3 HP**	**3 HP**	**3 HP**
125 Pa				1250	1890
250	420	560	650	1210	1870
375	410	550	640	1160	1810
500	390	540	630	1120	1740
625	380	510	620	1080	1670
750	370	500	610	1030	1600
875	350	490	580	980	1540
1000	330	460	560	930	1470
1125	300	430	530	880	1410
1250	260	380	500	820	1340
1375	140	320	460	770	1270
1500	0	0	420	720	1200
1625			330	660	1130
1750			220	570	1060
1875			90	480	980
2000			0	370	900
2250				0	690
2500					450
2750					0

KEHO CENTRIFUGAL FANS

3450 rev/min

Outputs in litres per second (L/s)

		(Backward Curved Blades)		
Static Pressure	**5 HP**	**5 HP**	**10 HP**	**15 HP**
125 Pa	1790	2110	3210	4180
250	1740	2110	3150	4140
375	1690	2060	3090	4060
500	1620	2010	3040	3970
625	1520	1960	2990	3890
750	1430	1910	2930	3820
875	1360	1860	2850	3740
1000	1310	1810	2770	3660
1125	1250	1750	2690	3560
1250	1200	1690	2610	3470
1375	1150	1640	2540	3370
1500	1090	1580	2450	3280
1625	1010	1520	2360	3180
1750	920	1460	2270	3090
1875	820	1400	2180	3000
2000	720	1310	2090	2900
2250	500	1110	1840	2690
2500	190	920	1580	2490
2750	0	680	1020	2230
3000		400	0	1860
3250		60		1320
3500		0		460

L. B. MOORE AXIAL FANS

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	3/4 HP 12" dia	1.5 HP 18" dia	3 HP 18" dia
125 Pa	970	2130	2730
250	440	1790	2500
375	280	1440	2070
500	150	1100	1620
625	30	810	1180
750	0	560	900
875		320	740
1000		130	570
1125		0	390
1250			220
1375			50
1500			0

NEW PRODUCTS INC. AXIAL FAN

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	3 HP 18" dia
125 Pa	2810
250	2600
375	2330
500	2010
625	1620
750	1380
875	1140
1000	990
1125	830
1250	660
1375	500
1500	330
1625	190
1750	70
1875	0

ROLFES AXIAL FAN

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	1/3 HP 12" dia
125 Pa	610
250	330
375	210
500	120
625	40
750	0

SUKUP AXIAL FANS

3450 rev/min

Outputs in litres per second (L/s)

Static Pressure	3.6 HP 18" dia	5-7 HP 24" dia
125 Pa	2690	5730
250	2550	5400
375	2400	5070
500	2240	4650
625	1810	4200
750	1390	3660
875	1120	3080
1000	890	2440
1125	720	1950
1250	530	1540
1375	330	1230
1500	130	910
1625	0	590
1750		250
1875		0

VERTEC CENTRIFUGAL FANS

(Variable speed)

Outputs in litres per second (L/s) at maximum amperes

Static Pressure	3 HP	5 HP
125 Pa		1980
250		1950
375	1480	1880
500	1480	1810
625	1480	1750
750	1440	1700
875	1370	1620
1000	1300	1550
1125	1230	1470
1250	1160	1390
1375	1080	1310
1500	990	1240
1625	890	1160
1750	790	1100
1875	690	1010
2000	590	770
2250	340	350
2500	60	80

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